REMARKS REGARDING THE AMENDMENTS

Amendments to the Claims

As is discussed at greater length below, Claims **1** and **15** have been amended to place them in condition for allowance and/or in better form for consideration on appeal, if that becomes necessary. As a consequence, applicants request entry of same pursuant to 37 CFR 1.116(b).

More particularly, Claims **1** and **15** have been modified to change each occurrence of the phrase "significantly changed location" to the phrase "moved significantly". No new matter has been introduced by virtue of this amendment.

Claims **29**, **31**, and **33** have been amended to correct a persistent spelling error. More particularly, the word "tranmissive" has been replaced in each of its occurrences by the word "transmissive." No new matter has been introduced by virtue of this amendment.

It is believed that this amendment, in addition to correcting an obvious spelling problem, will place the claims in condition for allowance and/or in better form for consideration on appeal, if that becomes necessary. As a consequence, applicants request entry of same pursuant to 37 CFR 1.116(b).

REMARKS

Previous allowance of Claims **13**, **14**, **21-26**, and, **28-35** is acknowledged. The Examiner's objections to Claims **3**, **7**, **9-11**, and **17** are similarly acknowledged.

In **Paragraph 1**, of the Final Office Action the Examiner indicates that applicant's amendment filed 6/13/05 has been fully considered.

CLAIM OBJECTIONS AND REJECTIONS

Rejection under Section 112, First paragraph

In **Paragraph 2**, the Examiner indicates that the previous rejection of Claim **27** under 35 USC 112, first paragraph, has been maintained. It is said that the claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. More particularly, it is said that the "optically transmissive central core" does not contain support in the specification. It is further said that a "sheet" is not a "core" as would be understood by those skill in the art of optical communications. Thus, it is said that the specification and drawings fail to provide enablement for what is presently recited in Claim **27**.

In reply, and as an initial matter, applicants would object to the Examiner's characterization of the field of the instant invention to be the field of "optical communications" (Page 2 of the Final Office Action). Applicants feel the instant invention would be more properly characterized as belonging to the subject matter of general optics, rather than the more specialized subspecialty of optical communications.

With respect to the substantive rejection, applicants believe the claim term "sheet" is fully supported in the specification. The Examiner has correctly identified the source of the support in the specification (i.e., "waveguide") but improperly limits the definition of "waveguide" to optically transmissive structures that are circular in cross section. However, imposition of that limitation to the present application is not justifiable: waveguides are commonly rectangular in cross section and applicants' use of this particular term was done in contemplation of that well known fact

As support for this proposition, consider the *McGraw-Hill Concise Encyclopedia of Science and Technology* at page 2026 (a photocopy of which is attached hereto), which is offered

in support of the proposition that a waveguide may be rectangular in cross section. Consider the following quote from that reference which is applicable to electromagnetic waveguides generally (emphasis added):

> The type of waveguide with a rectangular cross section is not only the commonest in use but also the simplest in theoretical analysis. Next to the rectangular type, metallic waveguides with circular cross-sections are most frequently used.

Thus, one of ordinary skill in (at least) the electromagnetic arts would immediately understand a waveguide / "core" to include a transmission layer that is at least approximately rectangular in cross section (e.g., a sheet as applicants have claimed). Of course, the familiar parallel-plate waveguide provides still another *very* familiar example of a waveguide that is certainly not circular in cross section, again arguing that those of ordinary skill in this art would understand perfectly well that applicant's core waveguide need not be circular.

Further, and turning now to optical waveguides specifically, planar or slab optical waveguides are similarly very well known in the field of optics. Consider the USPTO's own Art Class definitions and, more specifically, the scope of Art Class 385/129 (emphasis added):

> PLANAR OPTICAL WAVEGUIDE:
>
> This subclass is indented under the class definition. Subject matter wherein the optically conductive material includes a flat surface confining the optical beam therein.
>
> (1) Note. Cylindrically configured optical waveguides are provided for in subclass 123.
>
> (2) Note. This may include planar waveguides having imaging elements therein (e.g., Luneberg lens).

(taken from the USPTO Subclass definitions at the link indicated below:

http://www.uspto.gov/go/classification/uspc385/defs385.htm#C385S129000).

Note that this Art Class is being offered only for purposes of establishing a definition of "planar optical waveguide" and this should not be construed as an admission of the relevance of this class for searching purposes.

As further support, applicants would point out that a Google Internet search for the exact phrase "planar optical waveguide" produced over 3,600 hits. Similarly, a search for the exact phrase "slab optical waveguide" produced almost 300 hits. Clearly, those of ordinary skill in the optical arts will appreciate that a waveguide may be in the shape of a plane, a slab, or a "sheet" as applicants have termed it.

Thus, when applicants refer in Claim **27** to a "sheet" as a specific example of "an optically transmissive central core", those of ordinary skill in the art would recognize that support for this particular structure may be found in the specification wherein a "waveguide" was offered as an example of a light transmitting core.

As a consequence, it is believed that the instant rejection of Claim **27** under 35 USC 112, first paragraph, is improper and should be withdrawn.

Rejections Under 35 U.S.C. 102(e)

In **Paragraph 3**, the Examiner indicates that the previous rejection of Claims **1-2, 4-6**, **8, 12, 15-16**, and **18-20** under 35 U.S.C. 102(e) has been maintained. It is said that Menkedick et al. (US 6,320,510) discloses every element of applicants' claimed invention. More particularly, it is said that "controller **50** is <u>able</u> to determine the relative location of the patient on the bed and

thus whether any 'significant' movement has occurred." Page 3 of the Final Office Action, emphasis added.

In reply, applicants believe that the amendment offered above has made this rejection moot. This amendment is discussed at great length below in connection with Paragraph 4. Further, and to the extent that such is necessary, for all of the reasons set out in applicant's response (dated 6/9/05) to the previous Office Action (mailed 3/9/05), applicants once again object to this characterization of Menkedick. Applicant's previous response to the rejection under 35 USC 102(e) based on Menkedick et al. is incorporate herein by reference as if fully set out at this point.

Additionally, applicants would note that the fact that Menkedick's particular hardware might be "*able*" to determine if a significant movement has occurred is irrelevant: what matters is whether or not he *actually does* look for significant movement in a patient which, of course, he does not. Menkedick will fail to sound an alarm at the end of a turn interval if the patient moves – even momentarily – to a new location. If a patient briefly rocks to a new position, Menkedick's alarm will be silenced and reset, whereas applicants' alarm will not. Applicants' invention will sound an alarm at the end of the turn interval in such circumstances, thereby requesting caregiver intervention. Menkedick's general approach to patient monitoring, which is found repeatedly in the prior art, leaves many patients at risk of developing pressure sores. *These two inventions are clearly different.*

With respect to the amendment offered above, although applicants believe that the original intent of Claims **1** and **15** was abundantly clear, these two claims have been amended to

introduce the exact phrase "moved significantly" into the claim language. The language that was replaced ("significantly changed location") is believed to have been fully consistent with and supported by the specification but, in view of the Examiner's comments regarding the use of this phrase (discussed below in connection with "Paragraph 5") and to remove all doubt, it has been replaced with the text indicated. As support for the equivalence of the original and substituted phrases see, for example, Paragraph [0055], wherein the equivalence between "significant movement" and "significant change in location" is made quite clear:

> For example, it might be desirable to flag as significant only those location changes that persisted for, say, over ten minutes, i.e., the patient maintained the new position for at least ten minutes before returning to his or her original position. In other cases, a significant move might be measured in inches, e.g., say a horizontal movement of five inches or more.

In view of the foregoing, it is believed that Claims **1-2, 4-6, 8, 12, 15-16**, and **18-20** are in condition for allowance and should be passed to issue.

Claim Objections

In **Paragraph 4**, Claims **3, 7, 9-11**, and **17** are objected to as being dependent upon a rejected base claim and are indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conditional allowance of these claims is acknowledged. No reply on applicants' part is believed to be necessary to the content of this paragraph.

Response to Applicants' Previous Arguments

In **Paragraph 5**, the Examiner indicates that applicants' previous arguments have been fully considered but are not deemed persuasive.

In reply, the Examiner apparently seeks to distinguish between applicants' use of the phrase "significantly changed location" and the phrase "significant movement" (i.e., ". . . however, it is pointed out that the claims use the phrase "significantly <u>changed location</u>" (e.g., part (c2) of claim 1), rather than the phrase "significant <u>movement</u>". Page 4 of the Final Office Action, emphasis in original).

As was explained *supra*, it is believed that the original claim language clearly communicated applicants' intent (see Paragraph [0055] of the instant application, quoted previously), but the claim language has been changed to remove any puzzlement it may have caused the examiner. Thus, in applicants' view the *only* issue remaining for appeal is whether or not Menkedick's invention anticipates the applicants'.

Turning now to the Examiner's critique of applicants' arguments contained in the previous Office Action, it is axiomatic, of course, that the applicant can be his or her own lexicographer. Consider, for example, *Lear Siegler, Inc. v. Aeroquip Corp.*, 221 USPQ 1025, 1031 (Fed. Cir. 1984):

> It is the inventor applying for a patent who is permitted to be his own lexicographer. . . .

Accord: *United States v. Telectronics, Inc.*, 8 USPQ 2d 1217, 1220 (Fed. Cir. 1988), cert. denied, 490 U.S. 1046 (1989):

> Patent law allows the inventor to be his own lexicographer. . . . [T]he specification aids in ascertaining the scope and meaning of the language employed in the claims inasmuch as words must be used in the same way in both the claims and the specification.

Further, once the inventor has established a definition for a term, the claims *must* be examined using that definition. See, *In re Zletz*, 13 USPQ 2d 1320, 1322 (Fed. Cir. 1989):

> When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art.

Of course, the applicants have repeatedly indicated – both in the specification and in their various office action responses – that "significant movement" has a particular definition that is different from the ordinary use of those words:

> In determining the meaning of patent claims, "[w]ords in a claim" will be given their ordinary and accustomed meaning, unless it appears that the inventor used them differently.

Jonsson v. Stanley Works, 14 USPQ 2d 1863, 1871 (Fed. Cir. 1990).

Thus, it is puzzling to applicants as to why the Examiner has chosen to interpret "significantly" in applicants' claims by giving that term "its broadest reasonable interpretation." Page 4 of the Final Office Action. In applicants' view, this is simply incorrect. The Federal Circuit clearly permits a patent applicant to restrict and refine the meaning of words to make

clear the scope of the claimed invention. Thus, for the Examiner to base a claim rejection on "the broadest reasonable interpretation" of a word – in contravention to applicants' clear and specific limiting of the scope of this same term – is contrary to the teachings of the Federal Circuit.

Finally, the Examiner relies on *In re Self*, 213 USPQ 1, 5 (CCPA 1982) for the proposition that it is improper to read limitations from the specification into the claims for purposes of avoiding the prior art. Of course, that is *not* what applicants have done. Applicants have permissibly defined the term "significant movement" within the specification (e.g., see Paragraph [0089] which was quoted in the previous Office Action response) to be a movement to a new position which is maintained for a period of time sufficient to allow for tissue reoxygenation. That term, which carries a meaning different from the customary or "dictionary" definition is then used within one or more claims to make clear the invention that is claimed by the applicants. Thus, the applicants are acting as lexicographers in providing a particular definition for the phrase "significant movement" and then using that term in the claims.

In conclusion, it is believed that the instant claims are in condition for allowance and should be passed to issue. Consider the Federal Circuit's words in *North American Vaccine, Inc. v. American Cyanamid Co.*, 28 USPQ 2d 1333, 1339 (Fed. Cir. 1993), cert. denied, 114 S. Ct. 1645 (1994):

> The law is clear that "[i]f the claims, read in the light of the specification[s], reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more."

In the instant application, the applicants have set out very clearly to those of ordinary skill in the art how the claimed invention operates. As such, applicants request that the Examiner withdraw his objections and rejections and allow applicants' claims to issue.

Respectfully Submitted,

9/7/05
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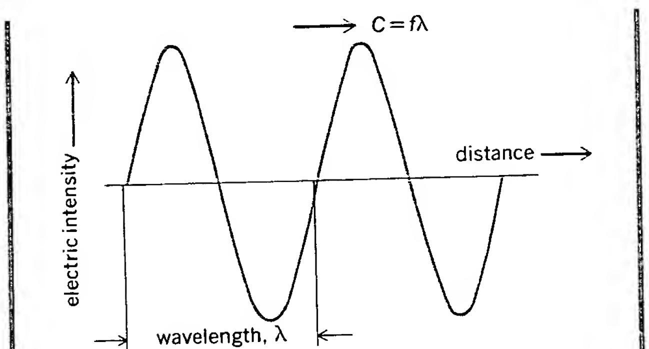
Waveguide A device which constrains or guides the propagation of electromagnetic waves along a path defined by the physical construction of the guide. In a broad sense, devices such as a pair of parallel wires and a coaxial cable can certainly be called waveguides. When used in a more restricted sense, however, the term waveguide usually means a metallic tube which can confine and guide the propagation of electromagnetic waves in the hollow space along the lengthwise direction of the tube. *See* COAXIAL CABLE.

Hollow waveguides of convenient sizes are best adapted to the transmission of microwaves. A sound wave can transmit through a pipe only when its wavelength is comparable to or smaller than the size of the pipe, and one would expect that a similar requirement should hold true for electromagnetic waves. Indeed, if the frequency of an electromagnetic wave is high enough that the wavelength is comparable to or smaller than the waveguide dimension, then wave transmission through the hollow waveguide becomes possible. *See* MICROWAVE TRANSMISSION LINES.

The type of waveguide with a rectangular cross section is not only the commonest in use but also the simplest in theoretical analysis. Next to the rectangular type, metallic waveguides with circular cross-sections are most frequently used. *See* ELECTROMAGNETIC WAVE TRANSMISSION. [C.K.J.]

Wavelength The distance between two points on a wave which have the same value and the same rate of change of the value of a parameter, for example, electric intensity, characterizing the wave. The wavelength is usually designated by the Greek letter λ (see illustration). *See* WAVE (PHYSICS); WAVE MOTION. [W.J.G.]



Wavelength λ and related quantities.

Measurement. The wavelength in a transmission system is obtained by measuring the distance between successive waveforms of equal phase. This measurement is most conveniently carried out in a standing-wave field in which the interference occurs between forward-propagating and reverse-propagating, or reflected, waves. A distance equal to one-half wavelength exists between successive minima or maxima in the standing-wave pattern. *See* WAVEMETER.

In order to specify the wavelength of an electromagnetic wave, it is essential to know the medium or device through which the wave is propagating. However, unless otherwise specified, it is general practice to quote the wavelength of an oscillatory electric wave as that in air, or free space. When this convention is used, all that is necessary is a frequency measurement in order to apply the relation $\lambda_0 = c/f$, where c is the velocity of light, λ_0 is the free-space wavelength, and f is frequency.

The standing-wave method of measurement is somewhat similar to the interferometer measurements used in optics. With shorter-wavelength radio waves it is possible to apply optically derived interferometer techniques directly to the measurement of wavelength.

A more convenient, if less precise, measurement method for the determination of wavelength is the Lecher wire wavemeter. With this simple device, wavelength is measured by sliding a short circuit along the line from a first to a second point of equal amplitude of effect, as indicated by absorption of signal being detected by an external detector, or by some similar method. The distance between two successive absorption maxima is one-half wavelength (λ/2). *See* TRANSMISSION LINES.

At lower frequencies, inductance-capacitance resonant circuits may serve similar functions as absorption devices. A variation of the absorption wavemeter, known as a grid-dip meter or grid-dip oscillator, provides in one instrument an absorption wavemeter and a calibrated oscillator, which may be used to determine the resonant frequency (or wavelength) of a passive network, such as an antenna system or an *LC* tuned circuit, by observing the dip in grid current of the oscillator as the oscillator frequency is tuned to the network resonant frequency. *See* RESONANCE (ALTERNATING-CURRENT CIRCUITS).

Microwave wavemeters make use of resonant coaxial-line sections or cavities as tuned elements. The two general types of microwave wavemeters are the absorption, or reaction, type and the transmission type. *See* CAVITY RESONATOR. [F.D.L.]

Standards. Wavelength standards are accurately measured lengths of waves emitted by specified light sources for the purpose of obtaining the wavelengths in other spectra by interpolating between the standards.

Spectra are produced by refraction in prisms or by diffraction from gratings. In either case, the spectra are usually photographed, and in order to identify or describe them reliably it is necessary to measure the positions of the unknown spectral lines relative to known standards. It is customary to photograph the spectrum containing the standards either superposed or juxtaposed on the spectrum under investigation. The wavelengths of hundreds of thousands of spectral lines have already been measured relative to a few hundred standards, and this will continue to be a major activity in spectroscopy. *See* SPECTROSCOPY.

At its meeting in October 1973 the Comité International des Poids et Mesures (CIPM) adopted recommended values for the wavelength of light (from two stabilized lasers) and for the speed of light. A He-Ne laser has been stabilized to an absorption line in methane at 3.39 μm. In addition, a ^3He-^{20}Ne laser has been stabilized to hyperfine components in an absorption line of either $^{127}I_2$ or $^{129}I_2$ at 633 nm. The principal gain from a shift to the standards based on the stabilized laser sources is the remarkable agreement in the measurements with independently constructed equipment. *See* ATOMIC STRUCTURE AND SPECTRA; HYPERFINE STRUCTURE; LASER SPECTROSCOPY.

Secondary iron wavelengths recommended in 1962 and later are all emitted by improved low-pressure, low-temperature sources. However, the accuracy of these standard iron wavelengths will not satisfy future precision demands in spectroscopy. In order to measure the wavelengths in very complex spectra with adequate accuracy, better and more uniformly spaced secondary standards are required. These requirements are met by electrodeless thorium-halide lamps excited by microwaves. In 1958 W. F. Meggers and R. W. Stanley published the wavelengths of 222 thorium lines ranging from 328.77885 to 698.96562 nm. This list has been extended to a longer list covering the range 297.14332 to 905.07361 nm.

Tables of other recommended secondary wavelengths have subsequently been published. Accurate compilations of Kr and Xe wavelengths have been made and wavelength standards in the vacuum ultraviolet region have been determined. [W.W.W.]